

**AQA, OCR, Edexcel**

**A Level**

# **A Level Biology**

**The Nervous System Answers**

Name:

**M M E**

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**Total Marks: /34**

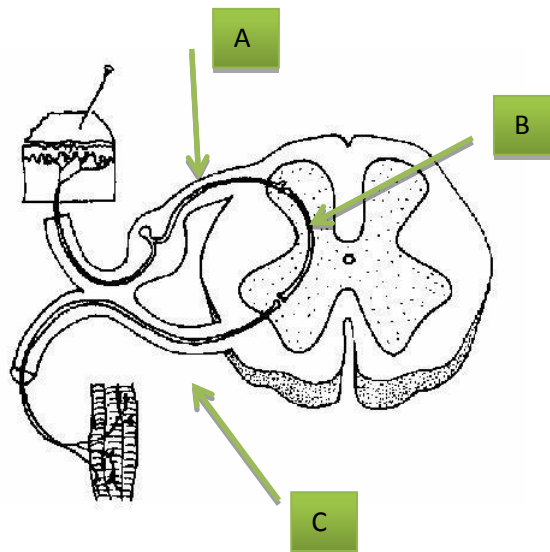
## The Nervous System

The nervous system coordinates signals around the body via the brain, spinal cord and millions of nerves.

1. An organisms ability to respond to changes in its environment increase its chances of survival.

a) i) What is the difference between receptor and effector cells in terms of stimuli? (2 marks)

ii) The diagram below shows a simple reflex arc. Identify the different neurons on the diagram below. (3 marks)



iii) How is an electrical impulse transported across a synapse? (2 marks)

iv) What is the autonomic nervous system and how does it control the body? (3 marks)

b) Photoreceptors are light detecting cells in the eyes of organisms. They convert light into electrical impulses.

i) What part of the eye is most densely populated with photoreceptors? (1 mark)

ii) Which nerve transmits electrical impulses from the eyes to the brain? (1 mark)

c) The two types of photoreceptor cell in the eye are rods and cones.

i) Rod cells are more sensitive to light. Explain why this is, in comparison to cone cells. (4 marks)

ii) What is meant by the term 'visual acuity' and how does this differ between rod and cone cells? (3 marks)

2. Organisms have developed many different types of receptors that respond to changes in the environment.

a. i) Identify below what kind of receptor is responding to each type of stimulus.  
(4 marks)

- A. Sensitive to changes in temperature
- B. Stimulated by light
- C. Sensitive to changes in pressure
- D. Stimulated by changes in blood PH

b) For receptor cells to function, they must have membranes that can become 'excited'.

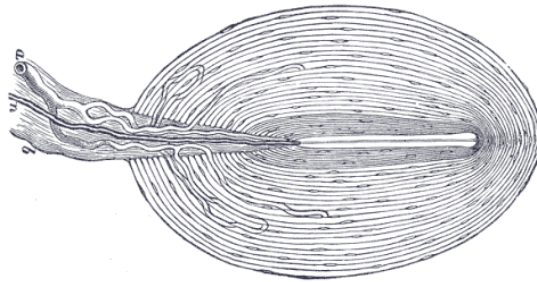
i) Explain how the resting potential of a neurone is maintained?  
(3 marks)

ii) What happens to the membrane potential when a nerve cell is stimulated? (2 marks)

iii) What is the precursor to an action potential called? (1 mark)

iv) What is meant by the term threshold stimulus? (1 mark)

c) The diagram below shows a receptor cell.



i) What is the name of this receptor? (1 mark)

ii) What changes does it detect in the environment and how does it create an action potential? (4 marks)